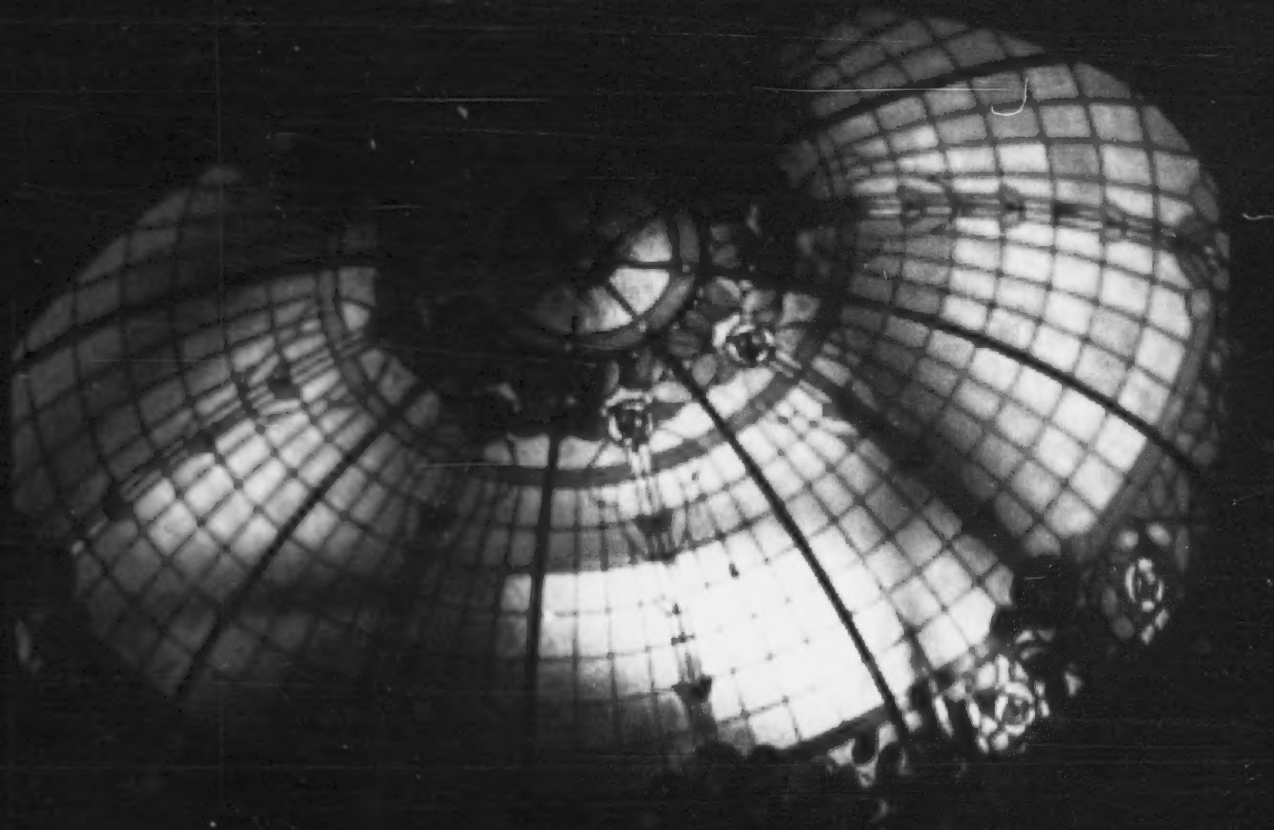
Saskatchewan Heritage Foundation

CONSERVATION BULLETIN SERIES

Window



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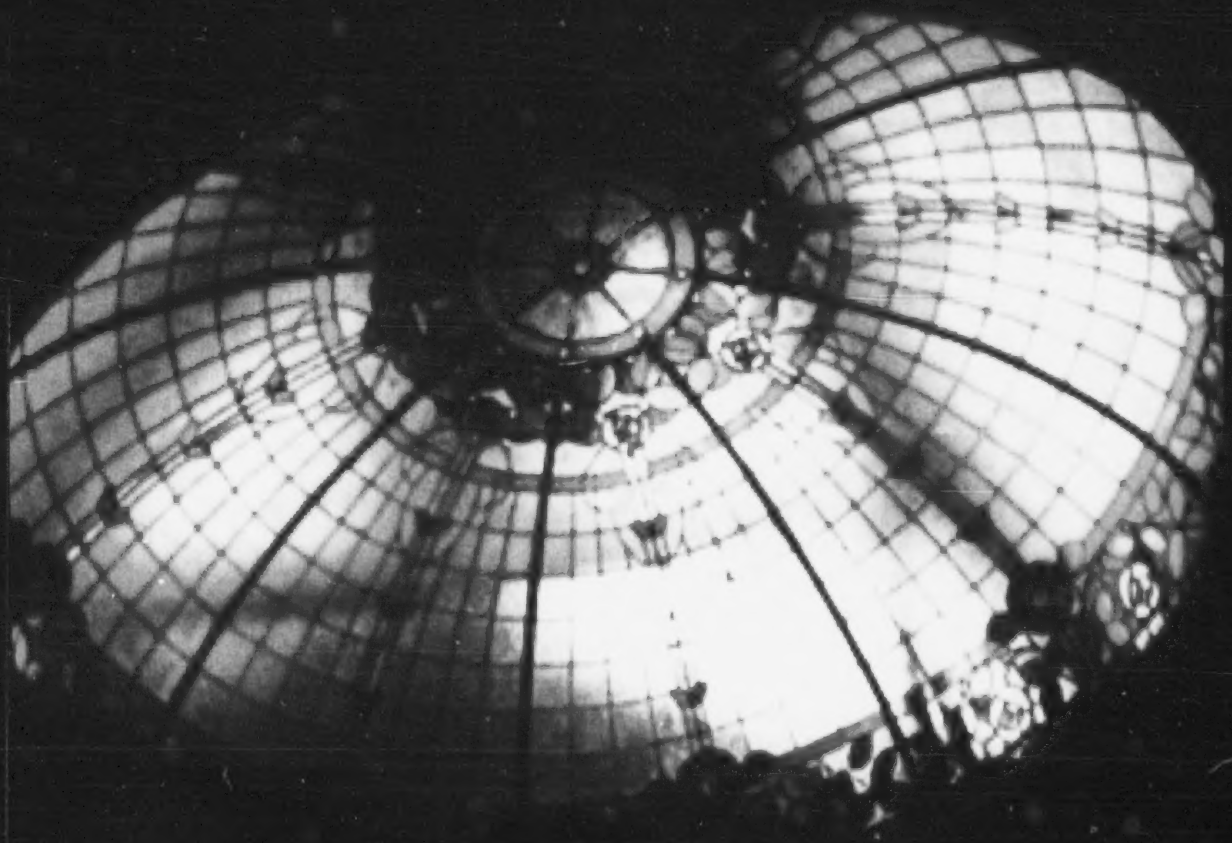

Window - This Conservation Bulletin is a resource guide for some of the most common issues surrounding wood windows found in Saskatchewan heritage structures. It provides factual information to anyone considering replacing repairable wooden windows.

Cover Photo - ROTUNDA SKYLIGHT, MOOSE JAW PUBLIC LIBRARY / Korvemaker

Canada's Historic Places | Lieux patrimoniaux du Canada

Saskatchewan Heritage Foundation

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3. Standards and Guidelines

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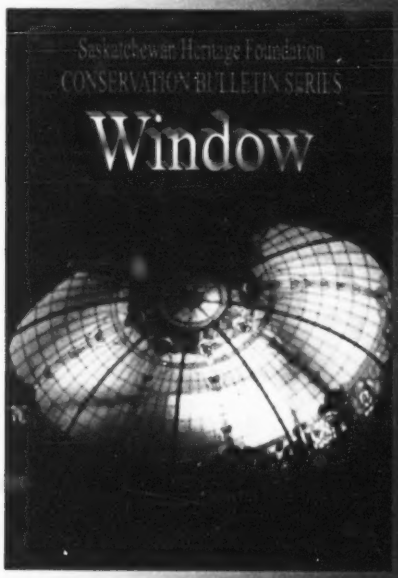

The Saskatchewan Heritage Foundation (SHF) is a Crown Corporation established by provincial legislation in 1991 to support heritage projects at the provincial and community level that seek to conserve, research, interpret, develop and promote Saskatchewan's diverse heritage resources.

The Heritage Resources Branch of the Ministry of Tourism, Parks, Culture and Sport facilitates the protection and conservation of heritage resources in Saskatchewan through inventory, regulatory, research, and consultative programs and services under *The Heritage Property Act*.

The Historic Places Initiative (HPI) - represents a collaboration of Canada's federal, provincial and territorial governments to: engage Canadians in the conservation of historic places; facilitate collaborations to build capacity and a credible and coherent heritage management system in Canada; and provide incentives to mobilize Canadian support of heritage conservation.

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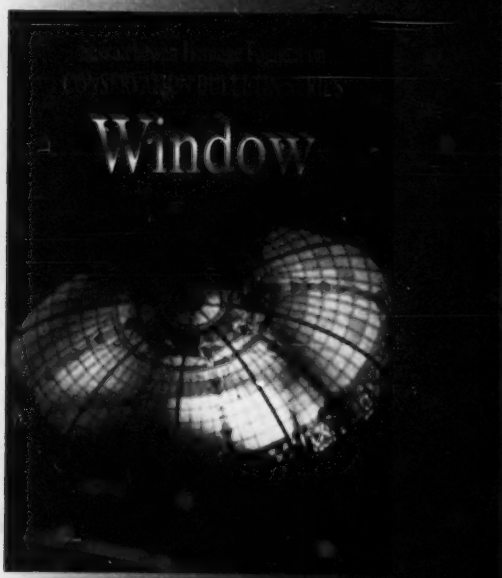

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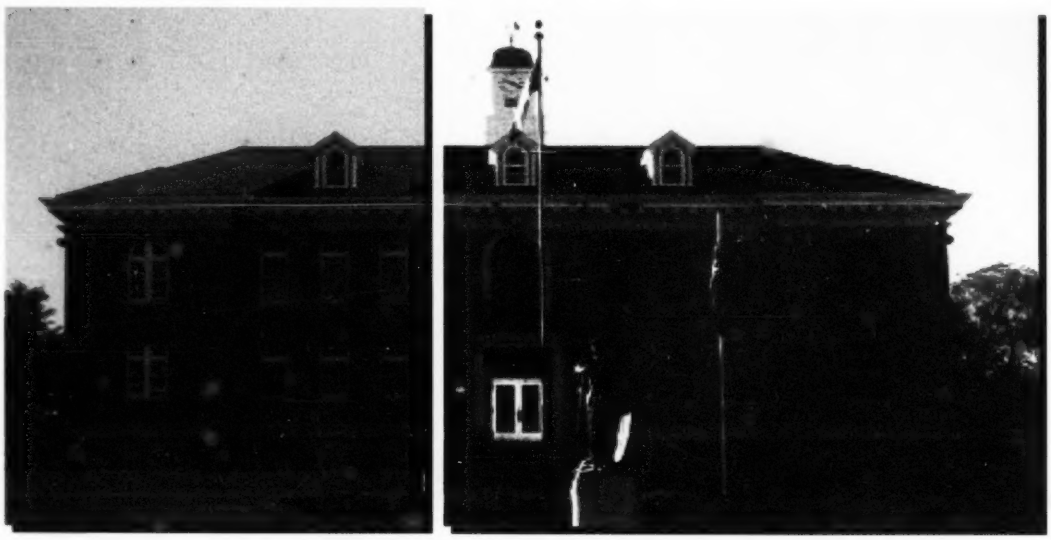
INTRODUCTION

Conserving Wood Windows - *In this era of rapidly increasing disposable products, many people are not aware that wood windows are readily repairable.* Due to extensive advertising by window producers and the difficulty of finding a craftsperson who can repair windows, these are often the first elements of a building to be thrown out and replaced with inferior products. The arguments for disposing of repairable windows are not defensible. The needless disposal of reusable windows results in environmental damage, the waste of money and energy, and the loss of heritage conservation opportunities.

Increasing awareness of unacceptable waste production and its negative effect on the environment is gradually filtering through our society. The premature disposal of sound building products is a wasteful practice that should end, particularly for such highly visible items as historic windows. The concept of reduce, reuse and recycle is just as applicable to the historic windows in your house or place of work as it is for other consumable products. There are more effective, efficient, sustainable and heritage-friendly practical solutions in dealing with deteriorated or problematic historic windows.

The purpose of this Conservation Bulletin is to identify some of the more common issues surrounding wood windows and provide factual information to anyone considering replacing repairable wooden windows.

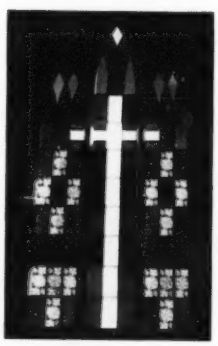


Court House, Prince Albert SK. - *shown with the original white-framed wood windows (left) and the replacement black aluminum sealed units (right). Neither the colour nor the new window design replicates the original, thereby giving the building a very sombre appearance.*

Gov. of Sask / Korvemaker (left) / Bisson (right)

Heritage Stewardship - Saskatchewan's treasured architectural heritage is entrusted to us for safekeeping. Responsible stewardship means conserving our heritage buildings for the benefit and enjoyment of present and future generations. This can best be achieved by practicing minimal change to a building and opting for repair well before replacement. The accepted conservation principle of "minimum intervention" is the key to responsible stewardship, whether it deals with windows and doors, siding, roofing or constructing an addition to an historic building.

Holy Trinity Anglican Church, Stanley Mission SK.
Government of Saskatchewan Website



Saskatchewan's oldest building (1854 to 1860), Holy Trinity is a Canadian national treasure. Glass for its Gothic-style windows was brought to this site by boat from England. Now over 150 years old, the maintained windows are still in service.

Award-winning stained glass artist David Johnson places replica window panes into a kiln, prior to their installation in Holy Trinity Church.

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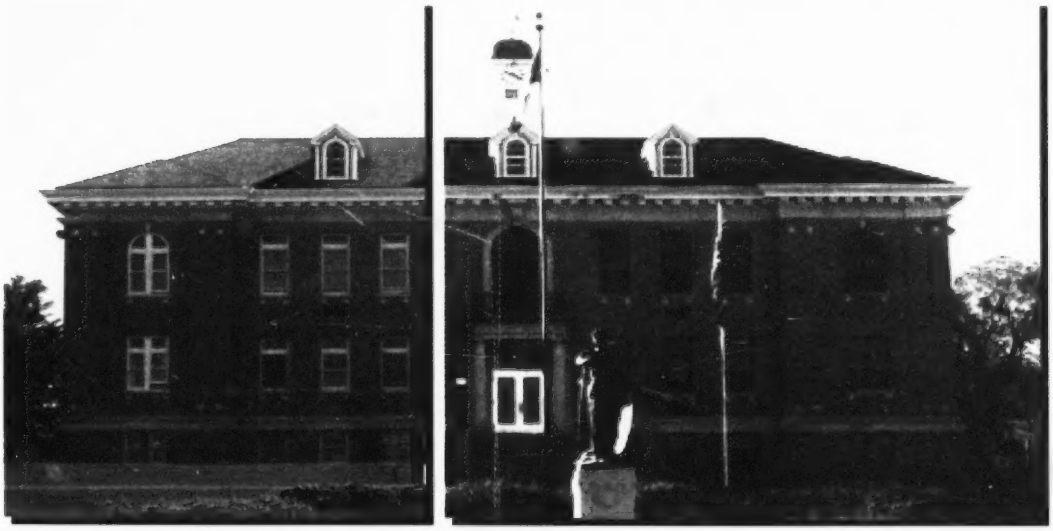

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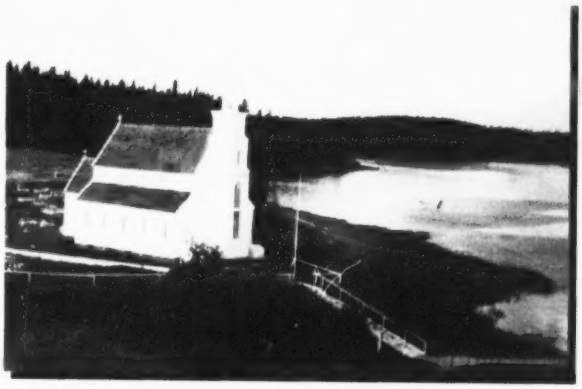

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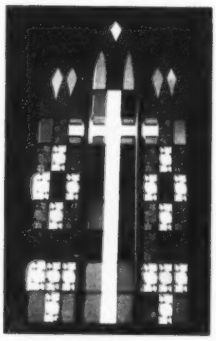

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Holy Trinity Anglican Church, Stanley Mission - Close-up of window pane. / Zelmer

Neil Balkwill Centre, Regina / Zelmer

Award-winning stained glass artist David Johnson places replica window panes into a kiln, prior to their installation in Holy Trinity Church.

INTRODUCTION

The Importance of Windows - *For many buildings, windows represent one of the most important original characteristics of the structure.*

Historic windows enable natural light and fresh air, and add character to the architectural design of any building. When an historic window is replaced, it could affect not only the building's appearance, but may reduce the amount of natural light and fresh air entering the structure.

New windows can be such a major intervention that the original appeal of the historic building is significantly compromised. It is therefore essential that, when rehabilitating an historic structure, particular care and attention be paid to treatment of the windows. Due to the importance of window design, many historic buildings specially identify widows in any formal designation order or bylaw. Consent may be required from the designating authority before replacing historic windows.

PARTS OF AN HISTORIC WINDOW

Forum Journal. 20, no. 2 (2006). National Trust for Historic Preservation; Illustration by mckibillo

A. Jamb	Vertical or horizontal member that frames the window opening.
B. Rail	Horizontal part of sash.
C. Pane / Light	Glass held in place by glazing putty and metal glazing points.
D. Top Sash	Upper section of window, may slide down to open.
E. Stile	Vertical part of sash.
F. Meeting Rail	One of two horizontal members in a double-hung sash which come together
G. Muntin Strip	Separates panes of a window; shape provides a clue to the window's age.
H. Bottom Sash	Lower section of window, typically slides up to open.
I. Casing	The finished, often decorative, framework around a window.
J. Stool	Interior shelf-like board against which the bottom rail of the sash rests.

Respecting Historic Design - *Architects deliberately specify certain windows to create a harmonious, esthetic and functional design.*

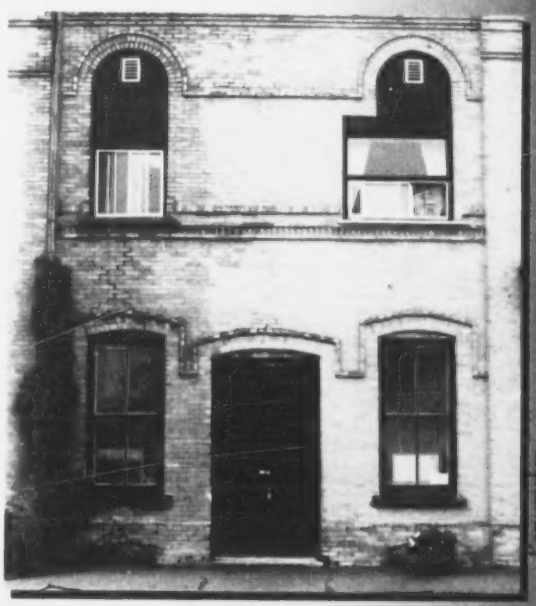
Windows and doors are intended to provide a specific welcome to people entering a building. The design of these features is particularly important in order to convey the impression that the architect intended. Hence, the kind and placement of windows in a private residence will be very different from those for a commercial, office, educational or religious structure.

Gov. of Sask / Korvemaker

Commercial Building, Wadena SK

The ground floor of many historic commercial buildings was often renovated in the mid-20th century, resulting in the installation of new windows inappropriate to the original design.

Wherever possible we should try to respect the intent and creative talents of the building designer, just as we respect those of a great painter or sculptor. Changing that design also changes the original intent, sometimes with negative effects that could significantly diminish the heritage value of a building.



Korvemaker

Commercial Building, Moosomin SK

While the original lower floor wood windows remain intact, the upper floor renovations do not respect the historic design.

Opposite Page - The basic parts of an historic window are illustrated on the previous page. Critical to this design, which clearly distinguishes historic from modern windows, is the presence of three-dimensional wood muntins that hold individual panes of glass. Imitation muntins, sometimes called grills, are an unacceptable alternative for historic buildings, as the proportions are almost always incorrect and their interior placement result in an awkward reflective appearance.

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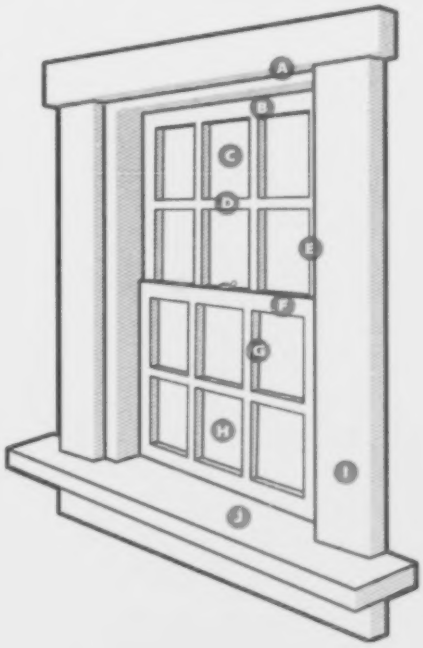

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WINDOW PERFORMANCE

Window Performance *- A common misconception is that windows are the primary source for heat loss and gain.* Energy conservation at the glazing point of a building may not address the primary cause for heat loss or gain. It would therefore be better to properly seal the spaces around the windows behind the casing, and increase insulation in the basement, walls and attic. Heavy curtains pulled across windows at night help reduce heat loss in winter and heat gain in summer.

Measuring Heat Loss and Gain - Since the mid-20th century, many building owners have been familiar with the R-value of insulation. More recently, the U-value has also come under consideration.

Diocese of Qu'Appelle complex, Regina SK
Original storm windows feature numerous individual panes.

Diocese of Qu'Appelle complex, Regina SK
Top-hung wood storm windows are acceptable. They protect historic multi-paned double-hung windows and can open.

R-value (thermal resistance) - *how well the window insulates the building and restricts heat transfer. Ratings start at 1. The higher the value the more effective the insulation in resisting heat flow into the building in summer and out of it in winter.*

U-factor /U-value (overall heat transfer coefficient) - *rate at which heat is lost from a building. The rating falls between 0.20 and 1.20. The lower the value the better.*

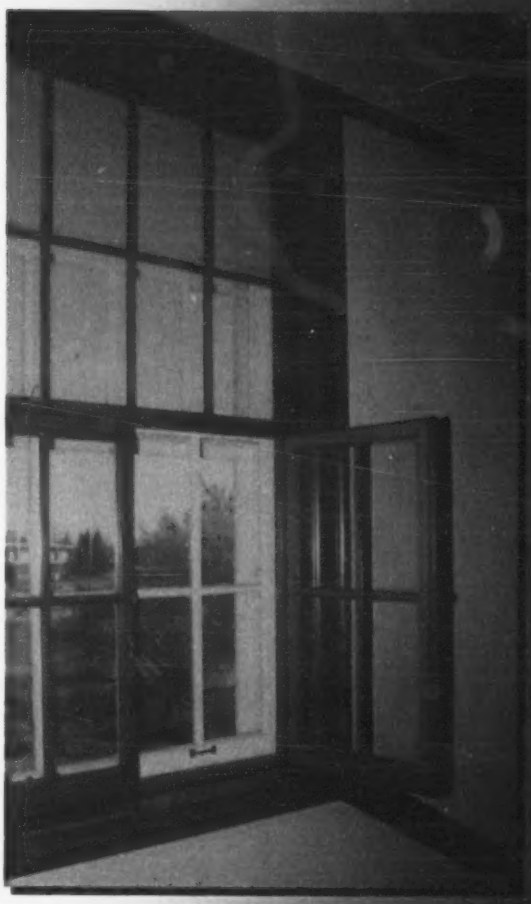
Glass and dead air between windows each have a basic R-value of one (1). Hence, a single pane double-hung window, with the addition of a single pane fixed storm window, provides an R-value of approximately three (3), better than the R2 rating for a sealed unit. If an additional interior casement window is added, this R-value increases to about R5. While this will improve the comfort level near the window in winter, these are not major areas where heat savings can be achieved. Regardless of the number of additional glass panes and sealed units, the R-value of glass will always remain low compared with increasing wall and attic insulation, where a rating of R-30 or more can readily be achieved.

From a cost and heritage perspective, it is, therefore, more practical to focus on maintenance and repair of historic original windows, than to devote a disproportionate amount of time, energy and finances to replacing historic windows with modern alternative units. Those cannot be easily repaired and require replacement on a regular basis, while old-growth wood windows can be repaired over and over for many decades. That is where the real money savings occur.

The Role of Storm Windows - Window frames for many historic buildings are deliberately designed to accommodate the addition of storm windows. They are often secured with interior hooks or exterior toggles for easy removal and reinstallation from season to season. Storm windows not only protect the primary window from exposure to the elements, but also significantly improve the energy efficiency of the overall window.

Another option, which has been used in Saskatchewan for over a century, involves the installation of casement windows on the interior. This approach to multiple glazing is an appropriate solution to the issue of energy conservation for windows in historic buildings.

Interior casements have existed in the Weyburn Court House for over eighty years. Properly installed and maintained, they help to reduce drafts, reduce heat loss in the winter, improve energy conservation, and enable the introduction of fresh air on an as-needed basis.



Court House, Weyburn SK

Opening the Court House's casement window provides access to the double-hung primary window.

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WINDOW PERFORMANCE

Life Expectancy of Windows *- The life span of modern replacement PVC (polyvinyl chloride) windows (20-25 years), or softwood windows (25-35 years) means that the high cost of the initial investment is repeated over and over. However, well-maintained heartwood windows can remain functional for decades.*

When considering window performance, it is also important to note that most wood windows retain their shape if well maintained. Plastic PVC windows, on the other hand, are subject to expansion and contraction, and become distorted, thereby allowing air to readily enter the building. In addition, PVC is relatively brittle in cold climates if accidentally damaged, and emits toxic chemicals in case of a fire.

Cost Savings - Too often people looking at window replacement consider only the short-term, and conclude that modern replacement windows are less expensive and hence preferable. While this may be technically true to a point, it is a false conclusion over the long-term. As owners of historic buildings tend to keep them many years, the long-term costs savings should be carefully considered.

Window repair is generally less expensive than replacement, and retains more of the original window material. It is therefore the preferred option both for authentic and economic reasons.

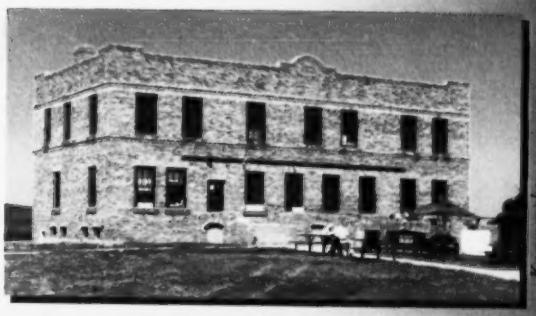
Replacement windows, with a projected lifespan of less than 30 years, could well have to be replaced several times by the property owner. This is a needless and expensive undertaking. It could also be potentially damaging to the surrounding building fabric, as deteriorating windows may allow water penetration for some considerable time before they deteriorate to the point that replacement is finally undertaken.

Sask Revenue Building, Regina SK

The windows have been replaced several times since the original 1912 units were removed in the 1960s.

10 Tips
To Improve Window Performance

1. Attach or renew weather stripping to reduce drafts and heat loss. This can improve window efficiency by up to 50%
2. Replace deteriorated putty and repaint after it has cured, to keep moisture from soaking into the wood.
3. Repaint exterior windows to prevent moisture penetration. Horizontal surfaces such as sills and rails suffer the worst wear due to water pooling.
4. Add an interior or exterior storm window, or both, to protect the primary window and reduce heat loss.
5. Keep double-hung wood windows sliding freely by removing excess layers of paint from the jambs and stiles.
6. Use the lock on double-hung windows to ensure that the meeting rails are held tightly together to reduce air flow.
7. Hang heavy curtains over windows in summer to keep out the heat; in winter to retain heat in the building.
8. Reflective window blinds or curtains in summer help keep the building cooler.
9. Remove the window casing and inspect the space between the window frame and the wall opening. Fill in any voids with removable insulation.
10. Clear weep holes at the bottom of storms to help moisture evaporate or drain away.



Former Bunk House / Heritage Visitor Centre
The refurbished 80-year old windows will, with proper maintenance, last for many decades.

The former Claybank Brick Plant, located west of Avonlea, was acquired by the Heritage Foundation through donation in 1992. The Plant was officially designated as a National Historic Site in 1994, and as a Provincial Heritage Property in 1998. The complex, which operated from its construction in 1912-1914 to closure in 1989, represents a unique aspect of Saskatchewan's industrial heritage.

Claybank Brick Plant National Historic Site
Former Bunk House, near Avonlea SK

Salvaged old-growth wood as well as the original historic glass is used to repair this 1920 window at the Claybank Brick Plant. Installed in 1920, the wood windows in the Bunk House deteriorated significantly while the building stood abandoned for over 30 years. By 1997, when restoration was initiated, many of the windows were broken and falling apart.

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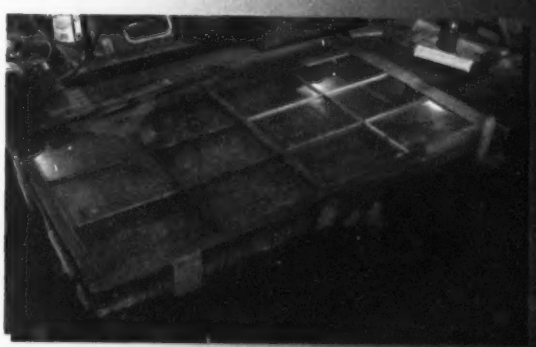
Former Bunk House / Heritage Visitor Centre
The refurbished 80-year old windows will, with proper maintenance, last for many decades.

The former Claybank Brick Plant, located west of Avonlea, was acquired by the Heritage Foundation through donation in 1992. The Plant was officially designated as a National Historic Site in 1994, and as a Provincial Heritage Property in 1998. The complex, which operated from its construction in 1912-1914 to closure in 1989, represents a unique aspect of Saskatchewan's industrial heritage.



Claybank Brick Plant National Historic Site
Former Bunk House, near Avonlea SK

Salvaged old-growth wood as well as the original historic glass is used to repair this 1920 window at the Claybank Brick Plant. Installed in 1920, the wood windows in the Bunk House deteriorated significantly while the building stood abandoned for over 30 years. By 1997, when restoration was initiated, many of the windows were broken and falling apart.

STANDARDS AND GUIDELINES

Conservation Treatment and Degrees of Intervention *- Altering an historic building, also referred to as "intervention," should be done with the least amount of negative impact.* To that end, heritage conservationists throughout the world have adopted standard preferred levels of intervention, beginning with the least intrusive. This applies to all components of a building and starts with an assessment of the perceived problem.

The following seven degrees of intervention are described below: Monitoring and Evaluation, Maintenance, Repair, Selective Replacement, Replacement-in-kind, Replacement not-in-kind, Protection and Mothballing.

1. Monitoring and Evaluation - A detailed annual assessment of the windows is helpful to determine the extent and cause of any deterioration and the most appropriate degree of intervention needed. This may initially be undertaken by the owner or occupant, but if damage or problems are identified, should include a trained professional familiar with all aspects of historic windows.

2. Maintenance - Routine maintenance can save considerable future repairs. As with many other repairable products, regular maintenance is the key to extending the life of windows in historic buildings. This has been demonstrated at historic buildings throughout the world where maintenance is a routine component of operating the structure and is widely recognized as such in conservation standards and charters.

Qu'Appelle Apartments, Regina SK

Regular maintenance requires a lot of work and may also be costly, but is a key factor to retaining the historic character of a building.

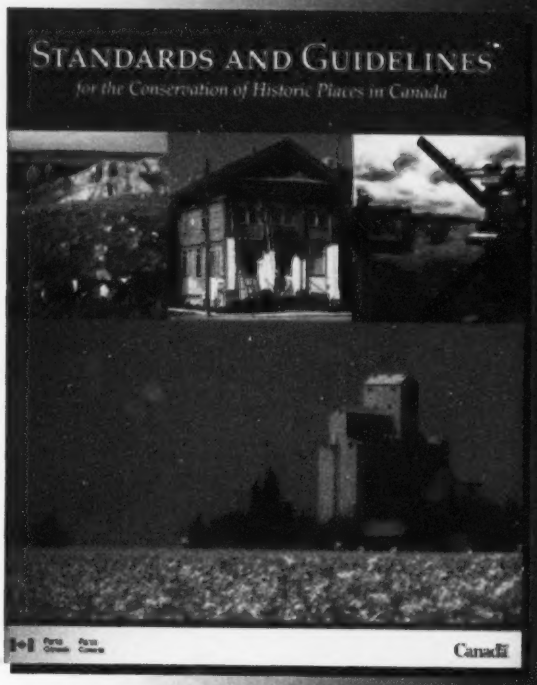
Regular maintenance is labour intensive and includes replacing deteriorated putty, scraping, and/or sanding peeling, blistering or alligator paint finishes, repainting the wood on a regular basis, and replacing broken window panes. It also requires the hardware to be kept clean and not compromised by painting the windows shut. This may require removal of previous coats of paint to avoid the build-up of successive layers of paint that impedes the smooth up and down movement of double-hung windows or the proper closure of casement units.

Guidelines
For Historic Window Repair

The *Standards and Guidelines* developed by Parks Canada in collaboration with heritage and industry professionals from across Canada provide practical guidance for anyone dealing with the conservation of historic buildings. This document has become a key tool for architects, engineers, contractors and craftspeople throughout the country.

This reference manual focuses on illustrating widely recognized conservation principles, identifying common issues and recommends or discourages certain interventions in order to maintain the heritage value of the building.

It is important to remember that solutions for one region are not necessarily applicable to another as local climate, humidity and soil conditions may all affect how well a building performs, and what kinds of corrective measures are necessary to make repairs. The generally dry conditions of Saskatchewan call for some very different restoration solutions to those on the damp coastal regions.



Standards and Guidelines for the Conservation of Historic Places in Canada

The Standards and Guidelines have been adopted by most provinces (including Saskatchewan) and many municipalities and organizations to guide their regulation and funding of heritage projects.

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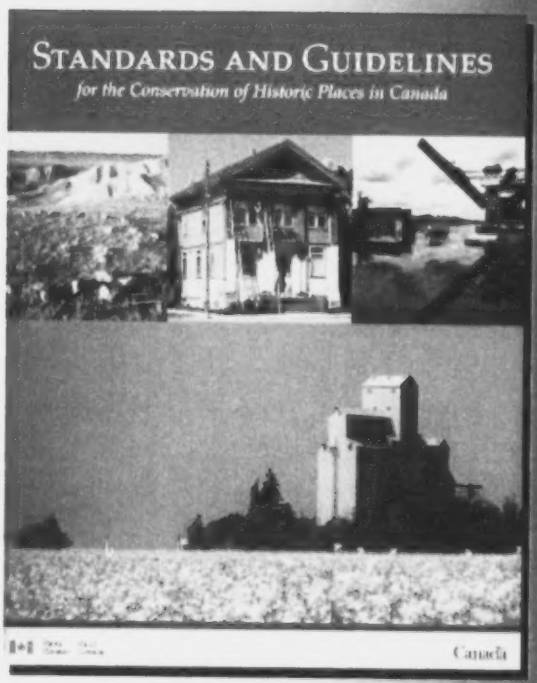

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CONSERVATION TREATMENT

Degrees of Intervention (cont'd) *- Even historic windows eventually require some repair. In the past, windows were routinely repaired when needed, and well-crafted units lasted for centuries.*

3. Repair - Some window repairs can be undertaken by local carpenters or people with some basic woodworking skills. However, more delicate replication of wood window components require specialized tools, a thorough knowledge of different woods, and the creative talent of a trained craftsperson. As well, a properly outfitted workshop is usually required to deal with the repair and restoration of multiple windows.

Working with historic glass is another challenge, due both to its scarcity and workability. There is only one source for historic glass – other existing historic windows. It is, therefore, important to salvage old windows from buildings scheduled to undergo alteration or addition, where windows are made redundant, or from buildings slated for demolition. This not only reduces potential landfill, but also provides an authentic stockpile of this fragile and rare building material.

Due to manufacturing impurities, historic glass is often more fragile than modern glass. Hence, it takes considerable experience to remove and reuse such glass, a talent not necessarily found in the local handyman.

Holy Rosary RC Church, Grass Lake RM #381 SK

A qualified local carpenter repairs historic windows damaged by a severe hail storm.

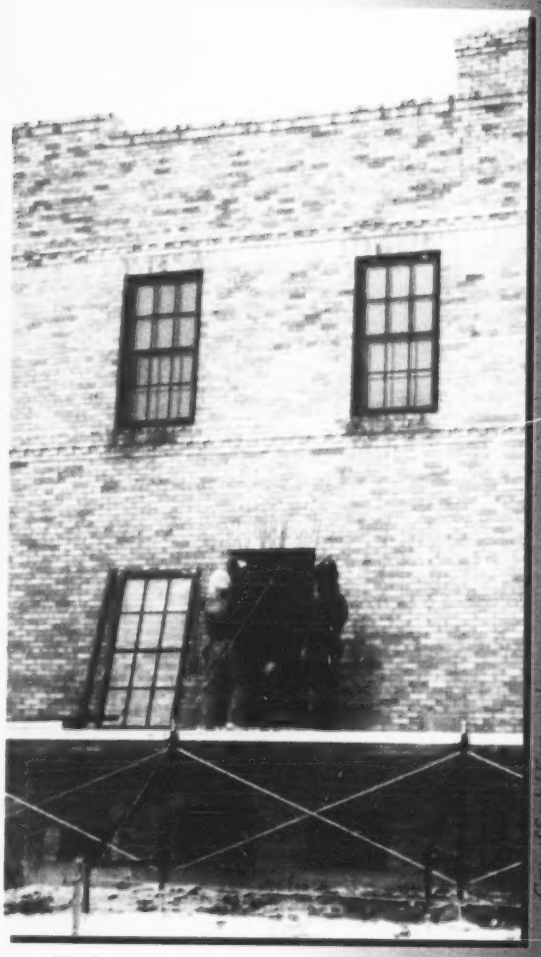
Claybank Brick Plant

Salvaged historic windows are stockpiled to repair the many broken windows in the complex.

4. Selective Replacement - When some wood window components have deteriorated beyond practical repair, it may be appropriate to replace these with old-growth wood to ensure future wear and expansion compatibility.

5. Replacement in-kind - As well, if an entire window needs to be replaced, either due to deterioration that is too extensive to repair, or because a unit is missing, it is preferable to replace this with a new wood window that replicates the original form and material. This is often required at historic buildings where the original storm windows have disappeared over time. Care should be taken to document this intervention and to date the window or to mark it in some other manner to differentiate it from an original window unit.

6. Replacement not-in-kind - In special circumstances, it might be necessary to install a new window that is not historically accurate. As with any intervention, this needs to be fully documented, so that there is no confusion between an original and this replacement window. Circumstances that might dictate such replacement include security, fire safety or the prevention of breakage due to a proven ongoing uncontrollable problem, such as excessive vandalism or frequent bird collisions. In such instances, the design of the new window should be as compatible as possible with the historic character of the building.



Claybank Brick Plant National Historic Site
Bunk House, near Avonlea SK

Replacement replica wood storm windows are installed at the Bunk House / Heritage Visitor Centre

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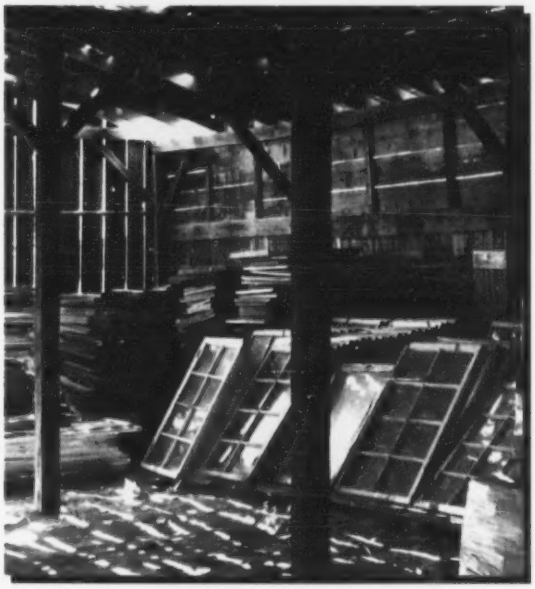

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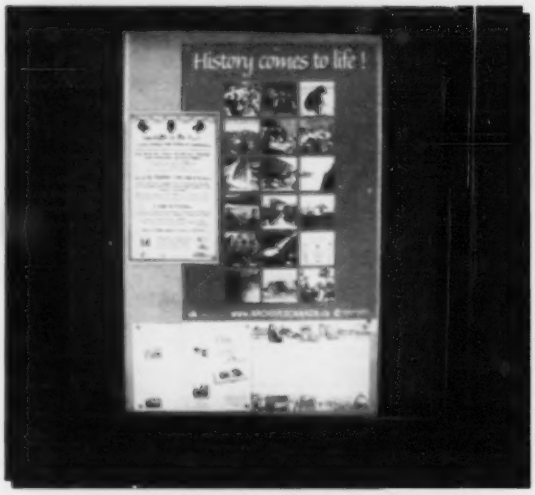
Degrees of Intervention (cont'd) *- Broken windows are a constant and recurring problem for owners of both vacant and occupied buildings. Breakage is sometimes due to vandalism, but also comes from hail and strong windstorms, as well as birds flying into the glass.*

7. Protection and Mothballing

One solution is to install an extremely strong plastic, such as Lexan, on the exterior. While this material is virtually indestructible, it becomes almost opaque due to pitting and yellowing over time. It is also expensive.

Nevertheless, it is an option worth considering, especially in order to protect stained glass. However, it should normally be installed in the form of a storm window, with individual panes the same size as the sashes, not as a single sheet extending over several sashes.

Often the solution is to cover the windows with plywood or a strong plastic covering which, while serving the purpose of temporary protection, have a very unattractive appearance. Another option, to cover the windows with a wire mesh, is equally uninviting.



Former Dollar Land Co. Office , Truax SK

The Lexan in this window is so pitted and yellowed that it is difficult to read the display.

Marysburg RC Church, SK

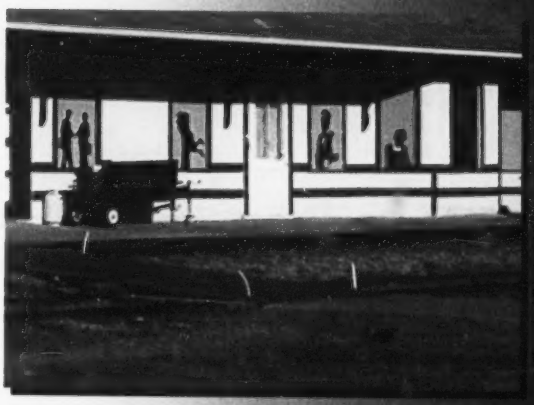
A Lexan storm window will protect the stained glass from breakage caused by rocks, hail, and birds, but has a major visual impact on the building. Although Lexan is clear and very reflective when first installed, it will pit and become almost opaque within a decade.

An appealing solution, which could also help attract potential new owners, is to build specially fitted plywood window covers, painted black, and surmounted with imitation wood muntins, painted the colour of the overall window frames. From even a short distance away, this gives the appearance of a real window, save for the reflective effect.

Lemberg, SK

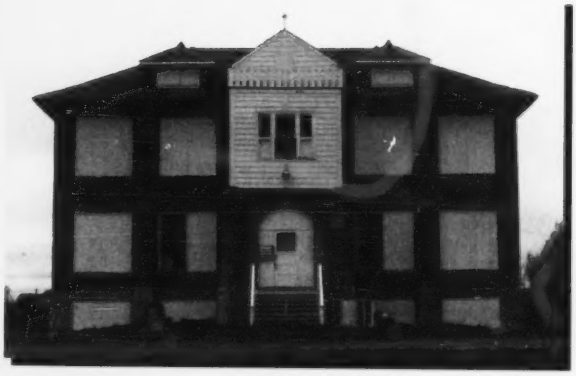
Imitation muntins over black-painted plywood give the appearance of a more realistic window for this unoccupied school.

At Radville, silhouettes of people inside the building enhance a version of this technique, and reflect their various functions as railway employees or passengers.



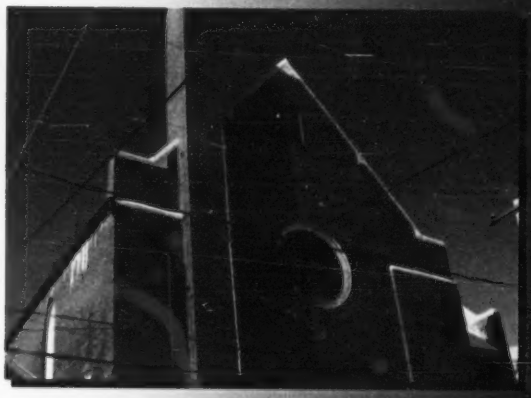
Radville, SK

Silhouettes grace the plywood-covered windows at the former railway station.



Alsask, SK

The plywood covers over the door and windows protect the interior, but are extremely unattractive and send a clear message to potential vandals that this former school is now vacant.



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Due to extensive vandalism, bullet-proof glass was installed to prevent further damage to the stained glass rose window.

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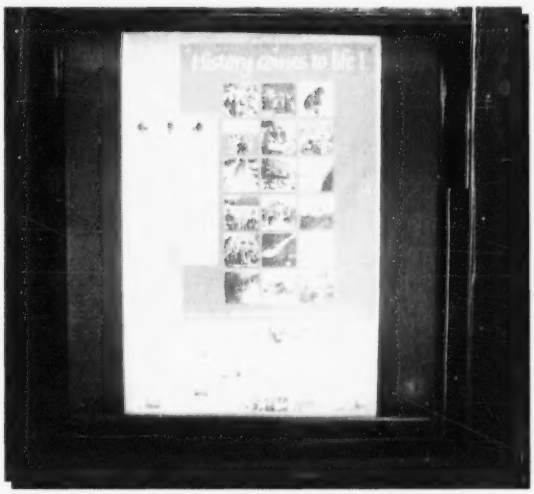

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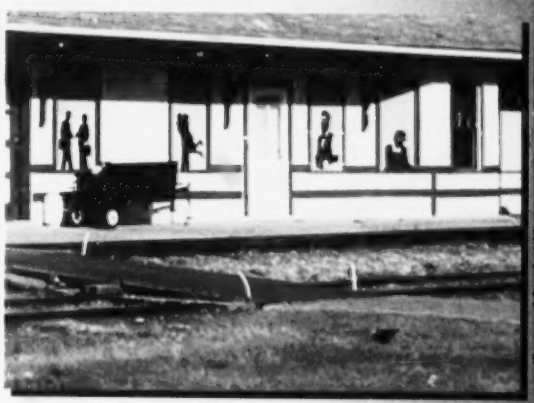

Gov. of Sask / Korvemaker

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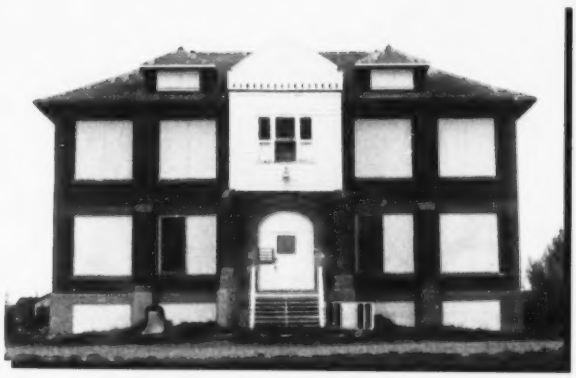

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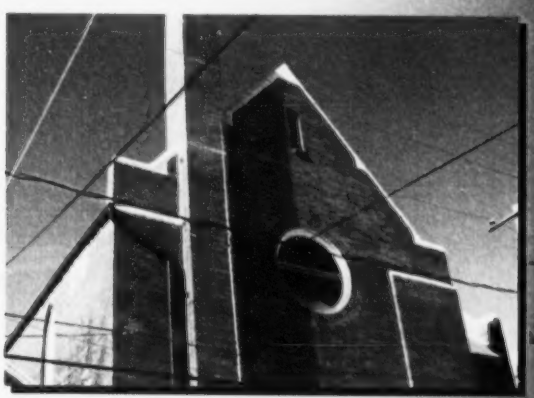

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ENVIRONMENTAL CONSIDERATIONS

It is not environmentally responsible *to throw away repairable windows. Preserving and restoring existing windows conserves the high quality materials and workmanship utilized in the past. Materials, particularly wood from old-growth trees, is superior to wood available for the manufacture of new windows today.*

Rosary Hall, Regina SK

The destruction of historic buildings, including their windows, is a major contributor to the premature closure of municipal landfills, and forfeits the potential and positive benefits of reusing and recycling high quality historic building materials.

Many historic windows throughout Saskatchewan were made from old-growth lumber and have now been in service for well over eighty years. Likewise, historic window hardware is more substantial and can readily be rehabilitated. Regularly repairing older windows will extend their life span.

And what happens to most historic windows that are replaced with modern windows? They are needlessly sent to the community landfill. For the past half-century replacement windows have commonly been sealed units that, once the seal breaks, are not repairable.

The windows are then replaced with new sealed units, and the defective windows also sent to the landfill. This approach to window replacement does not occur after 100 or more years (as with historic windows), but every 25 to 30 years. This is wasteful and costly. So, why replace windows that can last for centuries with units that have such a short lifespan? The answer lies, in part, with the false promise of "maintenance free" windows. While that may be the case for a decade or two, ultimately, the seals break down, and the promises of the past ring very hollow to the next generation.

Various types of "maintenance free" windows have been developed since the 1960s. First came aluminum, then metal-clad and plastic-clad, and now complete vinyl units, commonly called PVC. All focus primarily on the presumption of a reduction in maintenance, but few manufacturers discuss the actual cost to the environment, or the fact that these windows fail in one way or another after a relatively short period of time. Aside from the fact that PVC windows expand, contract and distort with changing temperatures, by far the greatest disadvantage to vinyl windows is their negative impact on the environment. Their manufacture requires much higher energy use than does the production of traditional wood windows. Like all other plastic products, their inability to biodegrade when discarded has an immense impact on landfill sites, and if they are burned, create poisonous gases. Vinyl window frames discolour over a relatively short time-frame due to the effect of the sun's ultra-violet rays. Wood window conservation is a proven environmentally sound practice.

Maintaining and Creating Jobs

Window repair and restoration is labour intensive, and promotes local employment over importation of pre-manufactured windows from distant places.

Although the knowledge and talent to repair historic windows is no longer commonplace, a number of craftspeople are still capable of performing this work in Saskatchewan communities. It is important for the local and provincial economy that this kind of in-house work be actively supported, and that the associated skills be passed on from one generation to the next.

There are now approximately 800 formally designated municipal, provincial and national historic buildings in Saskatchewan, as well as thousands of non-designated historic structures. Almost all of them require some form of window maintenance, repair or selective replacement, or replacement in-kind. Relatively few require outright replacement. Given the likely labour-intensive requirement to maintain and repair Saskatchewan's stock of historic windows, it offers an excellent opportunity for supporting local labour and trades and ensuring that an important craft is allowed to flourish.

Gov. of Sask / Korvemaker

Claybank Brick Plant

The project employed local craftspeople during the restoration program from 1997 to 2004.

Key First Nation Restoration Committee

Key First Nation, near Veregin SK

First Nations carpenters helped repair and selectively replace rotten wood sills at this church.

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Emmanuel Lutheran Church, RM of Lumsden SK

Local contractors repair church storm windows.

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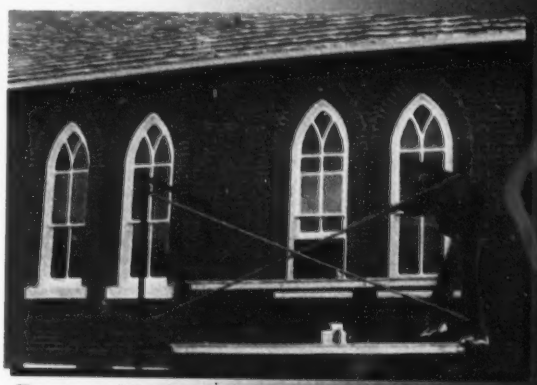


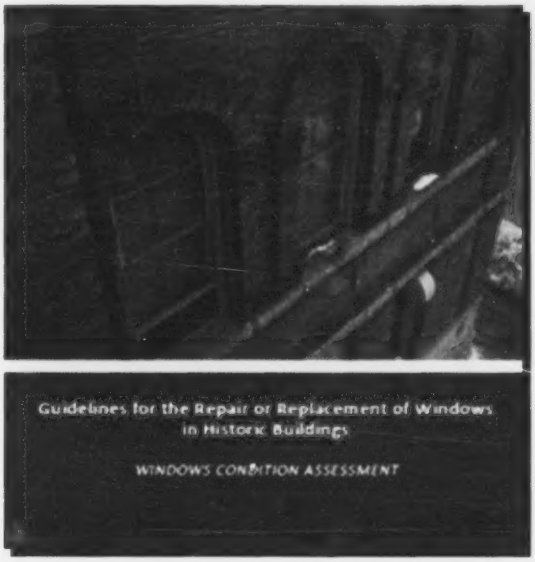
Emmanuel Lutheran Church, RM of Lumsden SK

Local contractors repair church storm windows.

ENVIRONMENTAL CONSIDERATIONS

Finding a Craftsperson *- Qualified window restoration craftspeople are hard to find in Saskatchewan, so out-of-province services might be an option that needs to be considered by some historic building owners in the province.*

Guidelines for the Repair or Replacement of Windows in Historic Buildings - This Windows Assessment Guide recently released by the Government of Manitoba provides additional guidance for heritage building owners contemplating window upgrading



www.gov.mb.ca/chc/hrb/pdf/windows_guidelines_2010.pdf

While qualified craftspeople may be readily available in more populated regions of the country, there is a clear shortage of such talent in Saskatchewan. However, as more historic buildings are rehabilitated and restored, the number of contractors, carpenters and craftspeople who develop expertise in this field is growing.

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Sacred Heart RC Church, Lebret SK *- A craftsperson who specializes in window repair and restoration can often perform basic work on site. Where deterioration is too advanced, it may be necessary to remove the window and repair it in a workshop.*

SHF Funding Assistance - Owners of designated Municipal or Provincial Heritage Properties are eligible to apply for financial assistance to rehabilitate their historic buildings. Activities such as window conservation can be funded up to 50% of the project costs. Funding is retroactive only to the time when an application has been discussed with Foundation staff and written approval-in-principle issued to the applicant.

When dealing with applications relating to window work, the Foundation funds the following work:

- repairs to original wood components
- careful replication of original wood windows

The Foundation does not fund the following:

- PVC windows
- any non-original material
- PVC-clad wood windows

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other photos are credited in photo margins

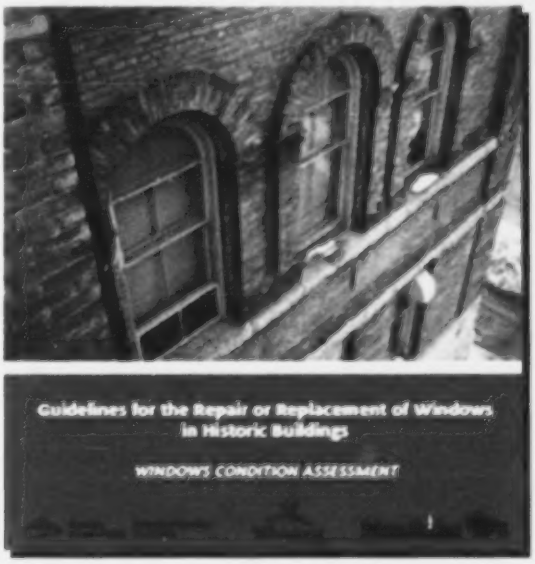
Pg 5 Bottom Left – Stanley – Gov of Sask – W. Zelmer
Pg 8 Top – Regina – Frank Korvemaker
Bottom – Regina – Frank Korvemaker
Pg 10 Regina - Frank Korvemaker
Pg 12 Regina – Gov of Sask – Frank Korvemaker
Pg 13 Parks Canada
Pg 14 Top – Reward – Restoration Committee
Bottom – Claybank – Frank Korvemaker
Pg 16 Top – Truax – Frank Korvemaker
Bottom – Marysburg - Restoration Committee
Pg 17 Left – Alsask – Gov of Sask – F. Korvemaker
Pg 18 Regina – Frank Korvemaker
Pg 20 Lebret – Restoration Committee

Holy Child Parish, Regina SK
Moses Hitler Mussolini Stained Glass Window

ENVIRONMENTAL CONSIDERATIONS

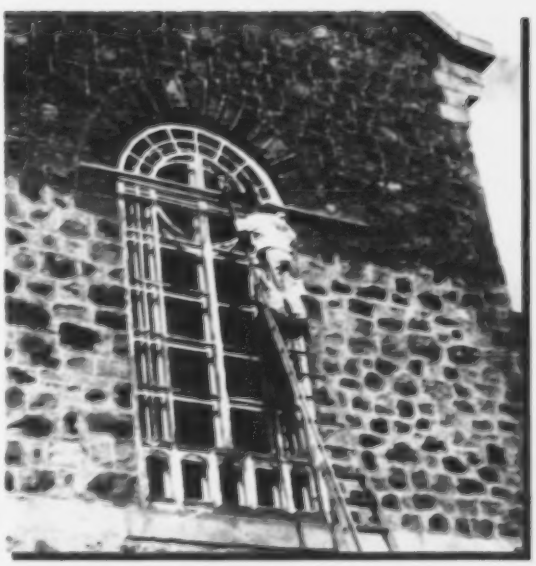
Finding a Craftsperson *- Qualified window restoration craftspeople are hard to find in Saskatchewan, so out-of-province services might be an option that needs to be considered by some historic building owners in the province.*

Guidelines for the Repair or Replacement of Windows in Historic Buildings - This Windows Assessment Guide recently released by the Government of Manitoba provides additional guidance for heritage building owners contemplating window upgrading



www.gov.mb.ca/chc/hrb/pdf/windows_guidelines_2010.pdf

While qualified craftspeople may be readily available in more populated regions of the country, there is a clear shortage of such talent in Saskatchewan. However, as more historic buildings are rehabilitated and restored, the number of contractors, carpenters and craftspeople who develop expertise in this field is growing.



Sacred Heart RC Church, Lebret SK *- A craftsperson who specializes in window repair and restoration can often perform basic work on site. Where deterioration is too advanced, it may be necessary to remove the window and repair it in a workshop.*

SHF Funding Assistance - Owners of designated Municipal or Provincial Heritage Properties are eligible to apply for financial assistance to rehabilitate their historic buildings. Activities such as window conservation can be funded up to 50% of the project costs. Funding is retroactive only to the time when an application has been discussed with Foundation staff and written approval-in-principle issued to the applicant.

When dealing with applications relating to window work, the Foundation funds the following work:

- repairs to original wood components
- careful replication of original wood windows

The Foundation does not fund the following:

- PVC windows
- any non-original material
- PVC-clad wood windows

Additional Photo Credits:

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Patrick Burns

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Moses Hitler Mussolini Stained Glass Window

LINKS AND REFERENCES

Today, there are numerous sources to consult *before and during window restoration work. Before making any extensive window repairs, it is important to become familiar with articles that discuss some of the problems and solutions for repairing historic windows.*

Links - A variety of websites may be consulted to address specific repair questions, or to find buildings with similar problems and how they were dealt with.

Architectural or Historical significance: http://www.oldhouseweb.com/how-to-advice/architectural-or-historical-significance.shtml

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University of Victoria Report on "Operating Energy Reduction in Heritage Buildings" Emily Carr House Victoria, B.C., 2007: http://www.tca.gov.bc.ca/heritage/docs/pdf/EnergyEfficiencyWindows.pdf

137 Things Window Companies Won't Tell You About Vinyl, Homeowners Defence League: 2005. www.rbaphoenix.com/pdfs/vinyl.pdf

Washington State preservation guidelines: http://www.dahp.wa.gov/pages/HistoricSites/Windows.htm

National Centre for Preservation Technology and Training's report on a Vermont study of historic windows performance: http://www.ncptt.nps.gov/Product-Catalog/Product.aspx/?ProductID=1996-08

Article from Illinois on "The Real Cost of Removing Historic Windows: http://www.illinoishistory.gov/PS/images/replacement_windows.pdf

National Research Council of Canada's article on Window Condensation in Historic Buildings that have been Adapted for New Uses, 1997: http://irc.nrc-cnrc.gc.ca/pubs/ctus/5_e.html

Practical Restoration Reports, by John Leeke:http://historichomeworks.com/hhw/reports/reports.htm

PVC Plastic: A Looming Waste Crisis, Greenpeace Report: http://archive.greenpeace.org/comms/pvctoys/reports/loomingcontents.html

Various reports on PVC plastics from the European Commission on Environment: http://ec.europa.eu/environment/waste/pvc/index.htm

"Irish Say no to PVC windows", 2004 report in Building Design: The Architects Website: http://www.bdonline.co.uk/story.asp?storyType=80&sectioncode=426&storyCode=3038313

The Heritage Canada Foundation website may be accessed at: http://www.heritagecanada.org/eng/main.html

APT provides a number of technical publications and other useful information relating to historic building conservation: http://www.apti.org/

Manitoba Culture, Heritage Tourism and Sport provides an excellent Architectural Style Guide and Glossary of window and other architectural terms: http://www.gov.mb.ca/chc/hrb/pubs/list.html

The Architectural Heritage Society of Saskatchewan website may be accessed at: http://www.sahs.ca/

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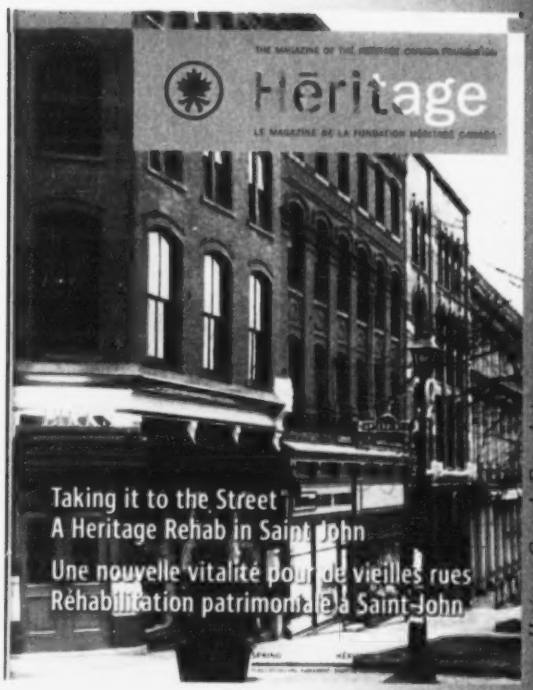
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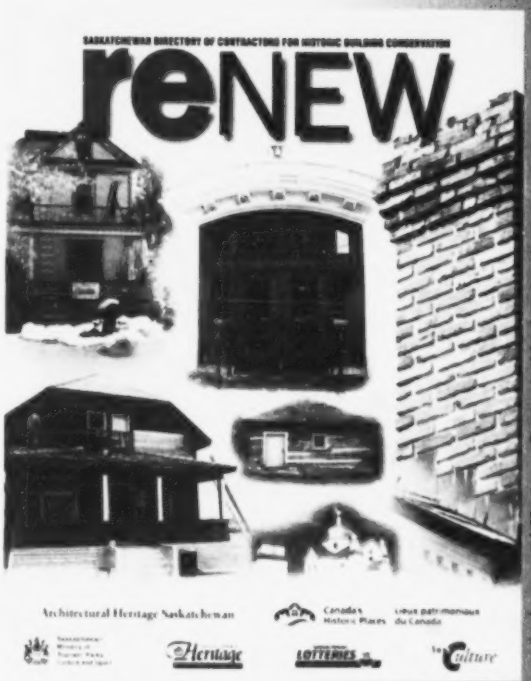

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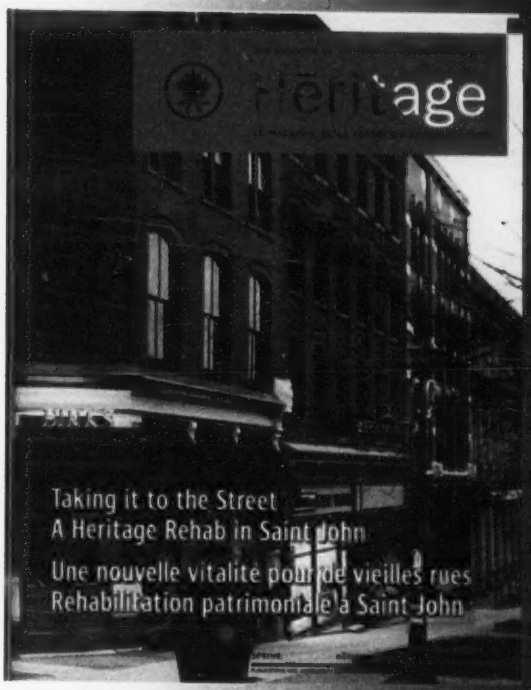
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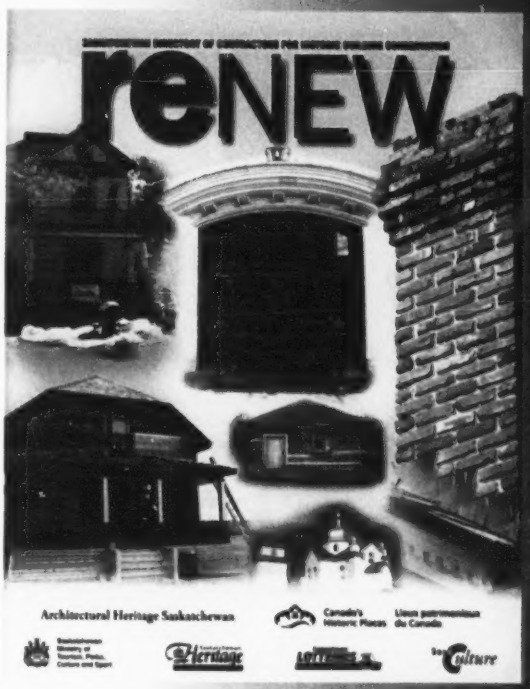

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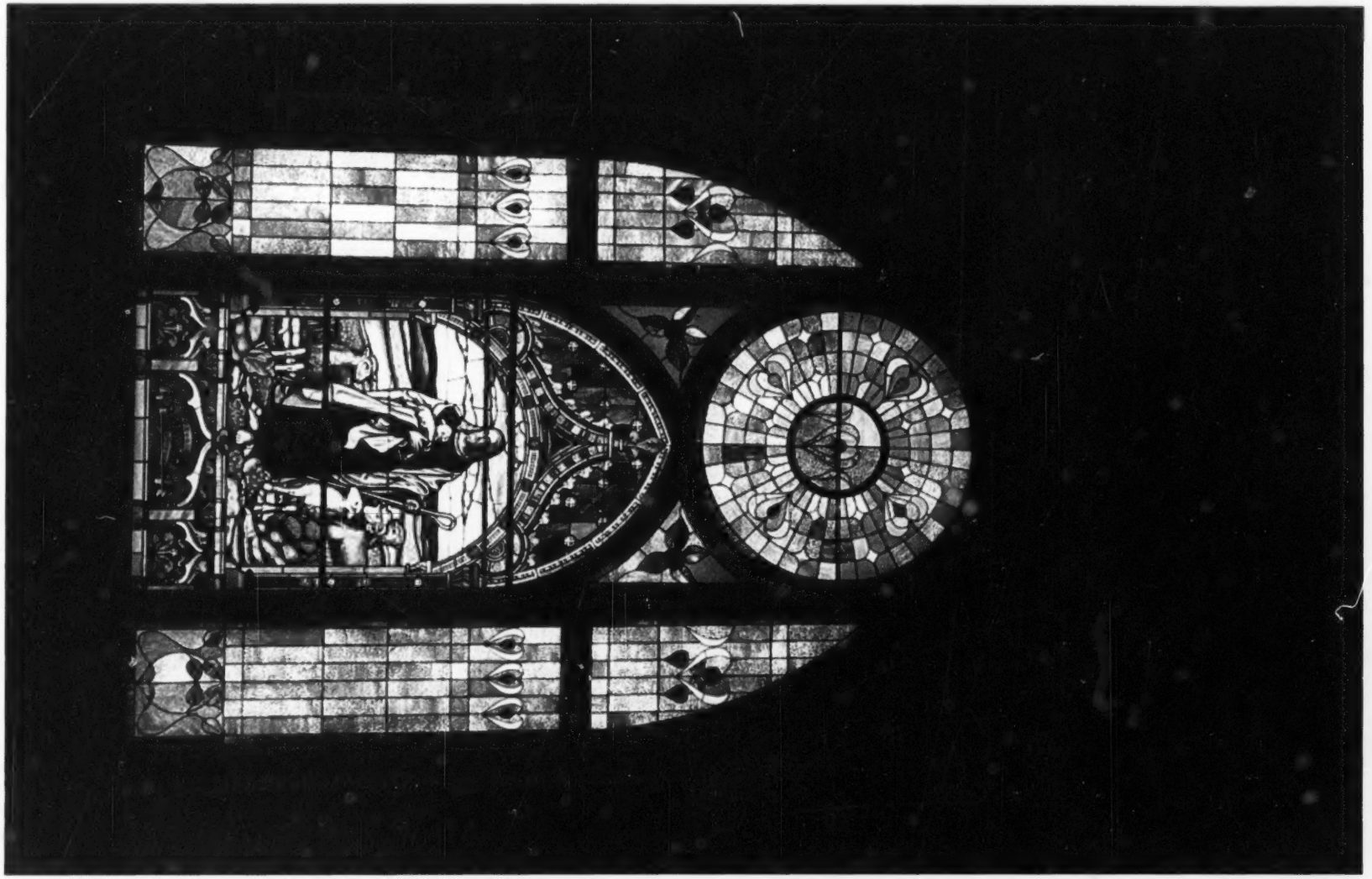

New Stockholm Lutheran Church, RM of Fertile Belt #183 SK / Korvemaker

It is important to remember that each site, location and project will have unique circumstances. Products and references in Saskatchewan Heritage Foundation conservation bulletins are not endorsements, and projects require consultation with qualified professionals who will need to visit your site, assess the situation and recommend the appropriate treatments.

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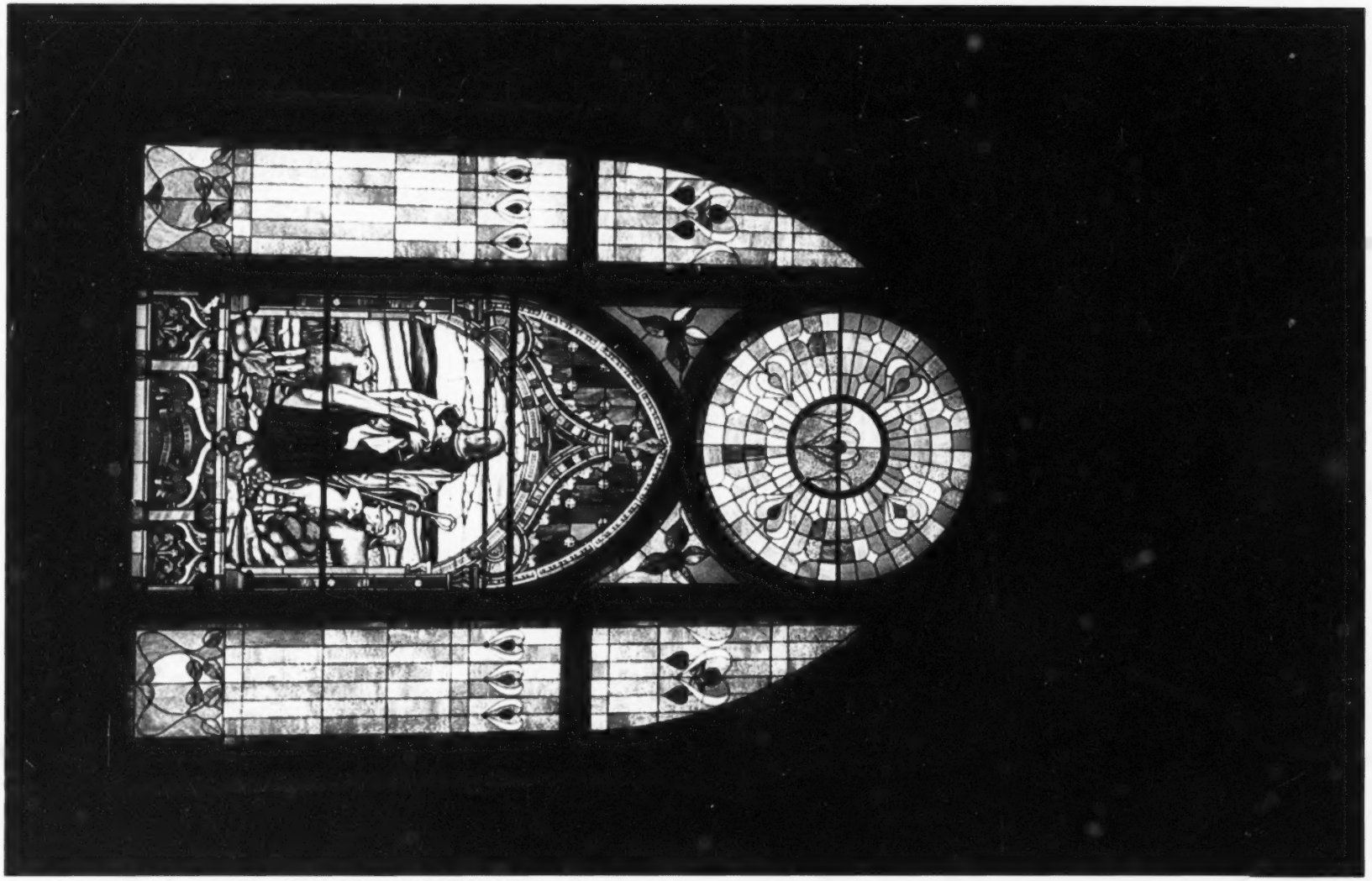

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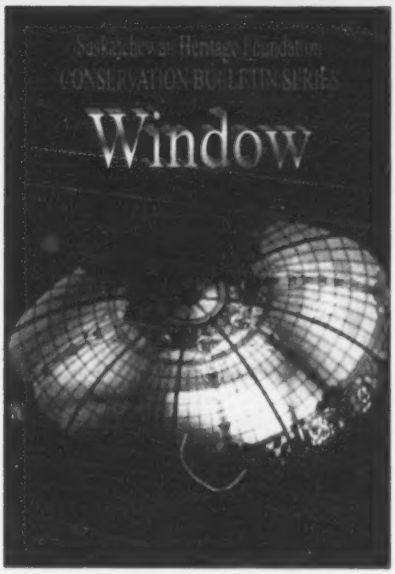
***The Saskatchewan Heritage Foundation** is the primary agency providing financial support to preserve and restore heritage property in our province.*

***50%** Assistance* for eligible costs related to restoration and repair of designated heritage resources.*

**Up to 50% depending on funds available.*
Visit our website for details:
www.tpcs.gov.sk.ca/SHF



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